DOCUMENT RESUME

ED 246 321 CG 017 562

AUTHOR Reilly, Nora P.; Morris, William N.
TITLE Toward Predicting the Relationship between Mood and Activity: Accuracy and the Use of Individual Differences.
PUB DATE Apr 84
NOTE 31p.; Paper presented at the Annual Meeting of the Eastern Psychological Association (Baltimore, MD, April 12-15, 1984).
PUB TYPE Information Analyses (070) -- Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Affective Behavior; College Students; Higher Education; Individual Differences; *Locus of Control; Physical Activity Level; *Self Evaluation (Individuals)
IDENTIFIERS *Moods; *Self Awareness

ABSTRACT

Several self-report studies of mood and activity have produced evidence of culturally biased theories which people share about the relationship between affect and behavior. In these studies, biased reporting may have been increased by taking mood and activity ratings concurrently rather than employing lagged independent ratings. To identify activities which are associated with mood, and to determine whether these associations are a function of private self-consciousness (PSC) and internality, 71 college students completed the Self Consciousness Scale, the Internal-External Scale, and 3 self-report mood and activity scales. The first self-report scale was completed before bed, the second scale the next morning, and the third scale before bed the following night. An analysis of the results showed that subjects who were highly aware of their internal states (as indicated by the Self-Consciousness Scale) and who possessed a strong internal locus of control were more likely to demonstrate relationships between self-reported mood and daily activities. Activities associated with mood were exercising, complaining, socializing, and studying. The findings suggest that a population of accurate reporters would be a prime target for the study of the self-regulation of mood. (Author/BL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED246321

Toward Predicting the Relationship between Mood and Activity: Accuracy and the Use of Individual Differences

Nora P. Reilly and William N. Morris

Dartmouth College

This paper has been prepared for presentation at the 1984 meeting of the Eastern Psychological Association in Baltimore, MD.

Running head: Mood and activity

CG 017562

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Nora P. Reilly

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Abstract

It is argued that a number of self-report studies of mood and activity have produced evidence of culturally biased theories which people share about the relationship between affect and behavior and that these reports do not necessarily contain veridical covariation information. In these studies, biased reporting may have been increased by taking mood and activity ratings concurrently whereas a less contaminated procedure should employ lagged independent ratings. In addition, we believe that some people are better able to objectively report their transient feeling states and behaviors. Using asynchronous measures of mood and activities, college students who were highly aware of their internal states as indicated by the Fenigstein, Scheier, and Buss Self-Consciousness Scale and who possessed a strong internal locus of control were more likely to demonstrate relationships between self-reported mood and daily activities. We suggest that a population of accurate reporters such as this would be a prime target for the study of the self-regulation of mood.

Toward Predicting the Relationship between Mood and Activity:
Accuracy and the Use of Individual Differences

Most people believe that there is some relationship between mood and activity. According to Clark and Isen (1982), moods are feeling states characterized as "general and pervasive, having no inherent targets..." and "are induced by pleasant or unpleasant experience...something positive or negative happening to a person"; they are considered transient and of low intensity, and usually do not interrupt ongoing activity. These feeling states, both positive and negative, are presumed to have a subtle yet systematic association with behavior. In order to learn from this connection, one must establish that a relationship between mood and activity actually exists and that the account of this relationship is an accurate one. In the experimental literature, Isen and her colleagues have manipulated events which induce a particular mood which, in turn, systematically affects subsequent behavior: shoppers who received a small gift later rated their televisions and automobiles more positively than did controls in an ostensibly independent consumer survey (Isen, Shalker, Clark, & Karp, 1978) and individuals who found a dime left in a public telephone booth were more inclined to help when the opportunity to do so arose soon after (Levin & Isen, 1975). Although manipulation checks were not used, these studies assume that mood mediates the various effects obtained - and we agree. But if the individuals involved were <u>asked</u> about their moods after these inductions, would they have been able to predict their

corresponding behaviors? How apparent is the connection between mood and activity?

Wilson, Laser, and Stone (1982) claim that people are relatively inaccurate about the predictors of their mood and, instead, rely on culturally based "shared theories" of their mood-behavior relationship. Over a five week period, 50 college students self-reported on 14 predictor variables and their overall mood each day; ratings were made on seven-point scales before bed each night. Their predictor variables were health, relationships, food, weather, exercise, work, sleep, and the days of the week. In addition to providing these daily recordings of mood and its predictors, subjects provided subjective weights of each predictor-mood relationship at the end of the study. An independent group of observer subjects was also asked to provide similar subjective weights. It was discovered that subjects were no better than observers in specifying relationships (as suggested by the subjects' daily ratings) between predictors and mood. Even when instructed to pay particular attention to the association between one target predictor (sleep) and mood, subjects were unable to provide more accurate covariation information.

Wilson et al. interpret these results to mean that people have shared theories about the causes of mood which are relatively inaccurate, given that subjects did not appear to use any kind of privileged information about the covariation between their mood and the predictor variables. They end their article

by suggesting:

> The jogger who incorrectly believes that exercise is correlated with her mood is going to run alot of unnecessary miles, and the party goer who incorrectly thinks that his mood is dependent on the amount of sleep he receives is going to leave alot of good parties too soon. There is much to be gained in predictability and control by paying close attention to one's own data. (p. 555)

Clearly, Wilson and his colleagues suggest important implications for the self-regulatory effects of behavior on mood. Their conclusions about a priori causal theories were wisely based on data obtained from repeated measurement occasions, although the measurement format itself may have been problematic for two reasons. First, information about the predictors of mood and mood itself were reported synchronously, i.e., they were reported at a stationary time each day. Other longitudinal studies have reported similarly measured same-day correlations between depression and pleasant events (Lewinsohn & Libet, 1972; Lewinsohn & Graf, 1973), mood and both pleasant and unpleasant events (Rehm, 1978), and mood and daily experiences (Stone, 1981; Stone & Neale, 1984). Indeed, Stone and Neale admit that, in synchronous correlations, mood may be influencing event recording. We would add that event recording could just as well be influencing reported mood. The second measurement problem deals with the format with which mood itself was measured.

Lewinsohn and his colleagues were only interested in depression (not positive affect), Rehm used a scale of worst ever (0) to best ever (10), and the Wilson et al. and Stone studies requested average mood over the entire day. Although Stone and Neale argue that overall mood is a more appropriate measure than mood at the moment, we contend that these are not different when measured concurrently with the day's events. Once again, event recording is a plausible influence on self-reported mood. Culturally transmitted knowledge of the predictor variables may increase the likelihood that reports of overall daily mood measured at the same time as its predictors would be consistent with shared beliefs about those predictors and not necessarily accurate reflections of the subjects' feeling states. In effect, the measurement situation in all of these studies demanded that subjects be consistent at reporting a more objective, socially learned predictor-mood relationship, suggesting that shared theories are operative. Note also that asychronous or lagged results were not obtained between events before or after the index day and mood on the index day. When one considers the relatively enduring nature of depression (as used in the Lewinsohn studies) as opposed to the present interest in feeling states, the absence of predictive relationships with activity over days may be due partially to measurement error.

A more successful approach to accuracy may be obtained by minimizing cultural bias in the measurement. In order to determine whether feeling state predicts subsequent activity, we

would propose inserting a mood measurement independent of any activity rating at some point earlier in the day. As a practical matter, monitoring this causal direction is easier to accomplish since one can always report on one's mood state but needs time in order to have engaged in the activities to be rated, therefore requiring that activity ratings occur in the evening. Such a procedure should help reduce the implicit association created by rating mood and activity concurrently. In addition, measuring mood in the morning and activity at night fits well with our conception of transient feeling states. Isen, Clark, and Schwartz (1976) suggest that moods are short lived and tend to fade away rapidly and Stone and Neale (1984) report that severe experiences do not affect self-reports of mood subsequent to the day the experiences were reported. Finally, self-reports used to assess both mood and activity have typically used absolute scales, with endpoints such as "very bad" vs. "very good" and "quite a lot" vs. "quite a little". The key to establishing accurate covariation across individuals is to provide a standard referent for each individual, i.e., assess deviation from one's "usual" mood and changes from one's "usual" amount of activity. This procedure should detect variation while controlling for potentially extreme individual differences in baseline.

Another concern in establishing veridical relationships deals with selecting variables which are amenable to control. Rehm (1978), Lewinsohn & Libet (1972), and Lewinsohn & Graf (1973) have attempted to determine causal direction between mood

and events, obtaining equivocal results. The items used in these studies included a broad range of very specific events and activities, such as "being relaxed" and "sunny day". Although these events may have some logical connection with subsequent mood, prior mood should not be predictive of uncontrollable events such as a "sunny day". We note, however, that Rehm includes a rating of control over the event's occurrence. Our interest in the self-regulation of affect (Morris & Reilly, 1984) demands that we try to select behaviors that subjects may be able to control, either consciously or automatically. In addition, an individual may not engage in one very specific activity, and consequently cannot report on it, but may engage in some components of a class of activities. We therefore propose that categories of activities - actual overt behaviors - be used as variables in order to minimize idiosyncratic differences in behavior. An intermediate level of a variable (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976) may well be most effective in increasing reliability and it is a secondary aim of this study to create such a data base of activities to pursue a nomothetic assessment of affect-regulating actions (Reilly & Morris, 1984).

Although studies using synchronous measurements fall short, intuitively some people are more accurate than others at reporting their mood-behavior covariation. In a post hoc analysis, Lewinsohn and Libet discovered that certain subjects demonstrated strong covariation and suggested that there are important individual difference variables moderating the

relationship between mood and activity. Given our suggestion for a lagged independent measure of affect, we would only expect those individuals who are more aware of their internal states and who feel more in control of the activities they engage in subsequent to reports of those states to demonstrate any kind of accurate covariation. Two individual difference measures exist whose combination may create such a population: They are the private self-consciousness (PSC) subscale of the Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975) and the internality dimension of the Locus of Control construct (e.g., Rotter, 1966). Identifying a group which fits this description would essentially constitute a "known groups" validation of our approach, if this group alone produces predicted results.

The private self-consciousness subscale asks individuals to rate items such as "I'm alert to changes in my mood" and "I'm usually aware of my internal states". A high score would suggest that the respondent ought to be more attuned to his or her feelings. Mullen and Suls (1982), for example, suggest that high privately self-conscious individuals are more likely to notice their reactions to stressors and take action to cope with them. But an examination of the items in the PSC subscale indicates that they are primarily directed at assessing an awareness of subjective feelings, not of objective actions. How one feels should not necessarily predict what one does. Turner and Peterson (1977) offer support for this distinction by failing to find a predicted relationship between high PSC and self-reported

emotional expressivity. If a correspondence between mood and activity is to be observed, then, we must also identify a population highly attuned to their actions.

Locus of control serves as our second individual difference measure. People who see their outcomes as contingent on their own actions are characterized as having perceptions of internal control (Lefcourt, 1976; Rotter, 1966). Alternatively, people who see their outcomes as unrelated to their behavior and caused instead by chance or others are described as having an external locus of control. Lefcourt, Miller, Ware, and Sherk (1981) suggest that the locus of control construct may be a moderator of stressors such that "internals" exhibit more control over their resultant mood state than "externals". People who perceive that they are in control of their actions should reflect a more accurate association between mood and behavior if they are also high in PSC. The combination of these personality dimensions should identify individuals who are more aware of the contingencies between their affect and action. If the self-regulation of mood can be assessed nomothetically (see Zevon & Tellegen, 1982), such a group should theoretically provide the accuracy in reporting necessary as a first step in examining the underlying processes.

The present study is an attempt to identify activities which are associated with mood and determine whether these associations are a function of PSC and internality. We predict that significant relationships between an independent measure of mood

and a measure of activity will be found only for individuals high in both PSC and internality. Furthermore, mood studies typically assess affect and activity level once per day (e.g., Wilson et al., 1982) at a stationary time. We propose to examine the predictive direction of mood to activity and activity to mood by sampling mood three times over two days. When mood and activity measures are taken concurrently as opposed to asynchronously, we expect evidence of shared theories across all subjects.

Method

Subjects

Seventy-one introductory psychology students received course credit for participation.

Procedure

Subjects were run in groups of 4 to 25. Our interest in mood and behavior was explained at the outset to ascertain cooperation. The Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975) and an I-E Scale (Levenson & Miller, 1976) were administered. The self-report forms were then distributed and the subjects released. Forms were to be turned in immediately prior to the next class meeting (two days later).

Measures

Subjects were given three forms stapled together with explicit instructions on top. Form 1 was to be completed immediately before retiring that night and consisted of a nine point Likert-type mood scale [Mood 1] with labels ranging from "considerably more negative than usual" (1) at that moment to

"considerably more positive than usual" (9). The midpoint was (5), "my usual mood". In addition, nine activities [Activities A] were listed with similar nine point scales; they were socialize, exercise, watch TV/movie, eat, drink alcohol/smoke marijuana, complain, study, attend to appearance, and sleep. Subjects reported whether they engaged in each activity "considerably less than usual" (1) to "considerably more than usual" (9) that day. The sleep item, however, referred to the extent they had slept last night. The midpoint was (5), "my usual amount". These activities were selected as representative categories of behaviors from previous work on mood and behavior typical of college students (Morris, Reilly, & Englis, 1984); they were chosen as activities which are regularly and freely engaged in by this population. Finally, three items assessing overall mood [Omood 1], the highest "high, and the lowest "low" for the day (after Wilson et al.) were included using an identical nine point mood scale.

Form 2 consisted only of an identical single item mood scale [Mood 2]. Subjects were asked to complete it as soon as was practical the next morning. Form 3 was completed immediately before retiring the following night and was identical to Form 1 [Mood 3, Activities B].

Analysis Plan

The major planned analyses were the following:

1. Median splits on the personality dimensions.
2. Correlations between Mood 1 and Omood 1 and between Mood 3

and Omood 3 will be done to test the relationship between mood "at the moment" and "overall" mood. (Due to the exploratory nature of the study, all analyses will be two-tailed.) If nonsignificant, separate analyses will be reported using the three overall mood measures.

3. Synchronous measurements (Mood 1 - Activities A and Mood 3 -Activities B, except for the activity "sleep".) Given that our interest lies in the more immediate consequences of mood and activity, we felt that evening mood measures associated with sleep from the previous night were too far removed from the activity to be included in these analyses.

   a) Multivariate analysis to determine if mood is associated with behavior over time across all subjects and activities.

   b) Simple regressions across all subjects for each activity separately (Mood 1 with each Activity A, Mood 3 with each Activity B). Note that cross-lagged analyses were deemed inappropriate for our sample (see Sweeney, Shaeffer, & Golin, 1982). In addition to having a larger sample, one of the requirements for a cross-lagged analysis is that measurements be concurrent. Although they are synchronous temporally, they are not conceptually (mood at the moment vs. the relative amount of activity engaged in over the day.)

4. Asychronous measurements (Mood 2 - Activities B). Note

that the predictive direction of Mood 2 - Sleep B is in the opposite direction from the other measures, given the phrasing of the sleep item; in this case, the relationship should demonstrate whether sleep predicts morning mood, rather than mood predicting activity.

a) Simple regressions for each activity with mood in each 2 X 2 cell created by the median splits.

b) Simple regressions for each activity with mood collapsed across all subjects.

Results

Median Splits

Median splits performed on the private self-consciousness and internal subscales of the individual difference measures resulted in subjects falling into 4 nearly equal cells. Analyses were collapsed across sex due to an unequal distribution of males and females across cells. The median for PSC was 37. Individuals whose PSC score was >= 37 were classified as High Privates (HP); those whose score was <= 36 were Low Privates (LP). The median for internal locus of control was 12: High Internals (HI) were those who scored >= 12 whereas Low Internals (LI) scored <= 11. The correlation between PSC and internal locus of control was nonsignificant [$r(71) = .06$, $p > .50$]. Seventeen subjects fell into each of the LP-LI and LP-HI cells, 18 were in the HP-LI cell, and 19 fell in the HP-HI cell.

Mood - Omood Correlations

Both correlations between Mood 1 - Omood 1 and Mood 3 - Omood 3 were highly significant [$r(66) = .62$, $p < .001$, and $r(69) = .52$, $p < .001$, respectively]. The total N was less than 71 due to listwise deletion of missing data. Analyses using the overall mood measures paralleled those using mood at the moment and will not be reported.

Synchronous Measures

A repeated measures multivariate analysis of covariance (high-low private x high-low internal x time(repeated)) with two covariates (Mood 1 and Mood 3) was performed on Activities A and B. This included all activities except sleep. Across all subjects, a combined estimate of the regression of Mood 1 and Mood 3 on activities collapsed over days suggests that mood over time is significantly associated with activity over time (Wilks lambda approximate $F(8,51) = 3.67$, $p < .002$). In addition, the overall relative change in mood is significantly associated with change in activity level (Wilks lambda approximate $F(8,51) = 2.37$, $p < .03$). Bartlett's test of sphericity was performed to ascertain whether the relationship among the variables was appropriate for multivariate analysis. It was significant for each, respectively: $\chi^2(28) = 55.31$, $p < .002$, and $\chi^2(28) = 45.35$, $p < .02$. Although these results suggest a general relationship between mood and behavior, the univariate effects for exercise [$F(1,58) = 9.66$, $p < .003$] and complain [$F(1,58) = 11.84$, $p < .001$] carry the result for the collapsed analysis as does the

effect for exercise [$F(1,58) = 11.39$, $p < .001$] in the difference score analysis. No multivariate effects for PSC, internality, or the repeated factor of time were obtained.

Regression analyses indicate that exercise and complain are significantly related to mood at the end of the day across all subjects on both concurrent measurement occasions. For exercise, the increase in variance was small but highly significant in both regressions: for Mood 1 - Exercise A, $R^2 = .162$, $F(1,63) = 12.19$, $p < .001$, and for Mood 3 - Exercise B $R^2 = .121$, $F(1,67) = 9.23$, $p < .004$. A negative relationship between mood and complaining was less strong but replicated nonetheless: For Mood 1 - Complain A, $R^2 = .176$, $F(1,63) = 13.43$, $p < .001$ and for Mood 3 - Complain 3, $R^2 = .044$, $F(1,67) = 3.06$, $p < .09$. Note that the correlations of Mood 1 with Mood 3, Exercise A with Exercise B, and Complain A with Complain B were all nonsignificant. In addition, two nonreplicated significant positive associations appeared in the Mood 3 - Activities B set of regressions for socialize ($R^2 = .133$, $F(1,67) = 10.25$, $p < .002$) and study ($R^2 = .082$, $F(1,67) = 5.99$, $p < .02$).

Asynchronous Measures

Separate simple regressions of Mood 2 on Activities B were performed for each of the four cells created by the median splits and for all subjects collapsed across cells. As predicted, relationships with mood were observed within the HP-HI cell. A significant negative association between mood measured in the morning and subsequent complaining was obtained ($R^2 = .245$,

$F(1,17) = 5.51$, $p < .04$) as well as two positive relationships between mood and socializing ($R^2 = .201$, $F(1,17) = 4.27$, $p < .06$) and sleep and mood ($R^2 = .257$, $F(1,17) = 5.89$, $p < .03$). Note the implied causal direction of the sleep result.

Two unexpected results in the HP-LI cell were also obtained. Morning mood and watching TV/movie later in the day demonstrated a negative association ($R^2 = .305$, $F(1,16) = 7.02$, $p < .02$), as did sleep and mood ($R^2 = .216$, $F(1,16) = 4.42$, $p < .06$). No further mood results were obtained in the planned analyses either by personality breakdown or collapsed across all subjects, as expected.

Supplementary Analyses

A number of exploratory analyses were performed to clarify the relationship between mood and our personality dimensions. The correlations of Mood 1 with Mood 2, Mood 1 with Mood 3, and Mood 2 with Mood 3 were mostly nonsignificant. For all subjects, however, the correlation between Mood 1 and Mood 2 was marginal [$r(66) = .22$, $p < .074$] and this was carried by the subjects in the HP-LI [$r(16) = .755$, $p < .001$] and HP-HI [$r(19) = .421$, $p < .08$] cells. The mean differences between self-reported mood ratings in each cell were nonsignificant, except for a marginal difference [$t(18) = 1.82$, $p < .085$] between Mood 1 ($M = 5.58$) and Mood 2 ($M = 4.89$) in the HP-HI cell.

A number of results appeared for the high private subjects and, given that two unpredicted ones appeared in the HP-LI cell, we collapsed regressions across internality to see if PSC by

itself moderated the effects. The only result that approached significance was a positive relationship between socialize and mood in the high private subjects ($\underline{R}^2$ = .083, $\underline{F}(1,35)$ = 3.15, $\underline{p}$ < .09).

The apparent overnight relationship between Mood 1 and Mood 2 in high PSC subjects raised the question of whether evening mood also predicted the subsequent day's activities in these individuals. Simple regressions of Mood 1 on Activities B were performed. Again, no overall mood effects were found across subjects but marginal negative associations between mood and complaining ($\underline{R}^2$ = .203, $\underline{F}(1,17)$ = 4.32, $\underline{p}$ < .06) and mood and sleep ($\underline{R}^2$ = .183, $\underline{F}(1,17)$ = 3.80, $\underline{p}$ < .07) were found in the HP-HI cell. Another strong negative association between mood and watching TV/movie in the HP-LI cell ($\underline{R}^2$ = .437, $\underline{F}(1,14)$ = 10.87, $\underline{p}$ < .006) was also observed.

To try to determine if Mood 1 and Mood 2 each independently predict complaining and watching TV/movie in their respective cells, a series of partial correlations was conducted. From previous analyses of the HP-HI cell, we know that relationships exist between Mood 1 - Sleep B, Sleep B - Mood 2, Mood 1 - Mood 2, and Mood 2 - Complain B. In other words, mood measured on the first night is associated with sleep that night, sleep that night is associated with mood in the morning, and mood in the morning predicts complaining later that day. Although all these variables appear interrelated, both Sleep B and Mood 2 temporally intervene in the Mood 1 - Complain B relationship. If Mood 1

independently predicted Complain B, a second order partial correlation between these two variables controlling for both Sleep B and Mood 2 should reveal a significant relationship. This did not occur [$r(15) = -.31$, $p > .20$]. First order partials for Mood 1 - Complain B separately controlling for Sleep B [$r(16) = -.385$, $p < .12$] and Mood 2 [$r(16) = -.31$, $p > .20$] help support the view that Mood 1 predicts these intermediate variables and not Complain B directly.

A similar approach was taken to tease out the Mood 1 - TV/movie B result in the HP-LI cell. In this case, Mood 1 - Mood 2, Sleep B - Mood 2, and Mood 2 - TV/movie B were associated but the Mood 1 - Sleep B relationship was nonsignificant ($p > .15$). A second order partial correlation between Mood 1 and TV/movie B controlling for Sleep B and Mood 2 [$r(12) = -.64$, $p < .02$] suggests that Mood 1 does independently predict the following day's TV/movie viewing. Clearly, separate first order partials controlling for Sleep B [$r(13) = -.61$, $p < .02$] and Mood 2 [$r(13) = -.58$, $p < .03$] support this.

We were also interested in discovering if regressions using both our concurrent measurement data sets would be informative if broken down by individual difference cell. Seven significant and six marginally significant results were obtained although no discernable pattern was evident. This should not be surprising given a greater reliance on shared theories across all subjects. Two of these results, marginal effects of Mood 3 on Socialize B and Mood 3 on Exercise B, came from the HP-HI cell.

A final subsidiary analysis was conducted to address the question of whether being in a positive or negative mood in the morning has a general diffuse effect across all activities later in the day, something which a correlational approach cannot specifically assess. In line with our original predictions, we would only expect the HP-HI subjects to demonstrate such an effect. A one-way, two level multivariate analysis of variance was done on all Activity B items except for sleep using a median split on the Mood 2 ratings as the sole factor. A rating of <= 4 classified a subject as being in a negative mood (n=7) while a rating >= 5 defined the positive mood subjects (n=12). For subjects in the HP-HI cell, results suggest that there is a subtle but detectable effect of good vs. bad mood across all activities (Wilks lambda approximate $F(8,10) = 3.17$, $p < .05$). Bartlett's test of sphericity was again acceptable [$\chi^2(28) = 43.32$, $p < .04$]. It is intriguing to note that no significant univariate effects were obtained. Essentially, this procedure has used a small N to approximate a crude factor analysis of the variables using a forced two factor solution: good mood and bad mood. These "factors", then, are statistically discriminable. A similar one-way analysis of variance was also performed on the conceptually equivalent (i.e., same predictive direction) Mood 1 - Sleep B data [$F(1,17) = 4.83$, $p < .05$], supporting the previous result. Corresponding analyses were performed on each of the remaining three cells as well as collapsed across all subjects; no comparable effects were obtained.

Discussion

In contrast to the asynchronous results obtained for the HP-HI cell, the argument that shared beliefs are held about mood and activity when measured concurrently was supported by the relationships observed between the activities "exercise", "complain", "socialize", and "study" and mood when measured across all subjects. People hold expectations about the predictors of their mood, some of which may be idiosyncratic and some of which may be socially learned. The variability inherent in idiosyncratic responses could not have produced the observed results. It may also be that consensual theories are particularly prevalent in regard to the exercise-mood and complain-mood relationships, at least in our college sample, since the synchronous results obtained for them replicated. It is reasonable to assume that beliefs about these particular activities may not be demonstrated in other populations, and that there are other such activity-mood beliefs which we failed to capture.

We argued earlier that synchronous measurements may be less likely to produce accurate self-reports as they seem to be contaminated by the influence of shared beliefs (Wilson et al., 1982). A more veridical relationship between mood and activity should rely on asynchronous measurements of activities and mood using people high in private self-consciousness and high in internal locus of control. The fact that three of the nine activities we chose to examine produced results relative to mood

in this cell lends credence to this proposition. Considering that a total of forty-five regressions were performed on the asynchronous data set, it is impressive that three of the five results occurred as predicted. Although it was possible that Wilson et al.'s subjects and observer subjects both could have been accurate reporters, these data now strongly suggest a viable alternative means of collecting more reliable covariation information on mood and activity. Clearly, the ultimate test will reside in studies using more extensive repeated measurement occasions and observers who do have privileged information about subjects and are in a position to actually observe the subjects involved (e.g., Stone, 1981; Stone & Neale, 1984).

It appears, then, that mood is best reflected behaviorally in our college students by the extent to which they complain, socialize, and sleep. The reciprocal effects of transient mood and activity in the HP-HI cell are particularly interesting when measurements in close temporal proximity are examined. Mood at the end of the day affects sleep that night, sleep then affects mood in the morning, and mood affects subsequent activity the following day. Without any indication that these subjects purposely engaged in these activities in order to regulate their affective states (see Morris & Reilly, 1984), we would have to suggest that these represent automatic or uncontrolled effects of feeling states (Clark & Isen, 1982) rather than self-regulatory attempts. Our definition of affective regulation is satisfied by action directed toward either the remediation of a bad mood or

the maintenance or improvement of a good mood. The direction of the relationships of our HP-HI results indicate that as mood improves, the relative amount of complaining declines while socializing and sleeping increase. However, the final supplementary analysis of the specific effect of good and bad moods on subsequent activities does not reveal any mean differences in activity, nor does a t-test show any change in mood from Mood 2 to Mood 3. These results, therefore, suggest that activities bear a subtle relationship to mood; we cannot specifically predict the differential effects of good mood and bad mood given an opportunity to engage in these activities.

An analysis of <u>whether</u> HP-HI people use action to purposely regulate affect would require evidence of intention, as well as a close examination of changes in activity level as a direct function of mood, and a follow-up measure of affect to assess the effectiveness of the attempt. Note that the logic of our design might in itself suggest that HP-HI individuals <u>are</u> self-regulators dispositionally, although such an assumption would be highly speculative. Ickes and Kidd (1976) suggest that locus of control may have explanatory power for us in that

> because the causes identified as "intentional" are typically those also identified as "internal" to a person, the dimension of intentionality is probably more than latent in Rotter's (1966) concept of locus of control. (p. 315)

Given the direction of the relationships obtained and the absence of objective verification, however, we can only conclude that these people would be a prime population in which to pursue our program of research. Nonetheless, our goal for this study has been satisfied; an individual difference approach has been fruitful in examining the mood-behavior relationship. A nomothetic approach to this problem has identified activities which best reflect mood within a well defined population.

The observation that relative amount of sleep predicts mood in the morning for both HP cells but in <u>different</u> directions may not be as troublesome as it first seems. We know that, for the HP-HI cell, Mood 1 - Sleep B and Sleep B - Mood 2 are both positively associated. We also know that Wilson et al.'s sleep-mood data, although inconclusive, are positively associated. Although it is possible that something distinct is occurring within the HP cells, we are more inclined to believe that the Mood 2 - Sleep B result in the HP-LI cell is a spurious result from a large number of analyses.

The interesting results obtained for mood and watching TV or movies in the HP-LI cell cannot be dismissed. Indeed, they have been found before. In a survey examining the effects of social and personal stress and TV viewing, Pearlin (1959) reports that people who were low on mastery were particularly likely to indicate that they enjoyed watching television programs which "help us forget our personal problems and troubles while we watch them". He further suggests that, instead of manipulating the

circumstances as people high in internal locus of control might, these people are resigned to their life circumstances and habitually use TV as an escapist device in order to control their distress. It would have been a serendipitous finding indeed if our subjects had reported these same motivations and were consciously engaging in an affect regulating activity. It seems more intuitively correct, however, to suggest that TV represents a culturally ingrained diversion for our population. People do not so much "choose" to watch TV, they watch it out of habit. People low in internality may be less likely to initiate alternative activities. Parkes (1984), for example, suggests that internals are more likely to modify their coping responses in a stressful situation than do externals, who appear to show little alteration in coping. This might suggest that our HP-HI subjects would be more varied in their repertoire of mood regulating behaviors than the HP-LI subjects, who engage in a more restricted range of habitual activities. Such an explanation might help us understand why Mood 1 also predicts TV viewing on the following day.

Methodologically, the issue of causal direction of mood and activity is far from closed. Although our focus rested on gathering accurate covariation information, the next step will be more difficult. An analysis of the reciprocal effects of mood and activity, when appropriately measured, now needs to be done. A modeling technique such as LISREL (Joreskog & Sorbom, 1981) may be the way to go in assessing the causal relationship between

these two variables. A final methodological note deals with the possibility of nonlinear relationships in the data. A standard examination of scatterplots and residuals accompanied each regression (Mosteller & Tukey, 1977) and, although such analyses need not be reported, served as a necessary check for curvilinearity.

We find it encouraging that a phenomenon as ephemeral as mood state produced a subtle yet pervasive effect across a range of activities. We are also hopeful that future dependent measures can be derived from these results.

References

Clark, M. S., & Isen, A. M. (1982). Toward understanding the relationship between feeling states and social behavior. In A. Hastorf and A. M. Isen (Eds.), Cognitive social psychology (pp. 73-108). New York: Elsevier.

Fenigstein, A., Scheier, M. F., & Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. Journal of Consulting and Clinical Psychology, 43, 522-527.

Ickes, W. J., & Kidd, R. F. (1976) An attributional analysis of helping behavior. In J. A. Harvey, W. J. Ickes, & R. F. Kidd (Eds.), New Directions in Attribution Research (Vol. 1) (pp. 311-334). Hillsdale, N. J.: Lawrence Erlbaum.

Isen, A. M., Clark, M. S., & Schwartz, M. F. (1976). Duration of the effect of good mood on helping: Footprints on the sands of time. Journal of Personality and Social Psychology, 34, 385-393.

Isen, A. M., Shalker, T. E., Clark, M. S., & Karp, L. (1978). Positive affect, accessibility of material in memory and behavior: A cognitive loop? Journal of Personality and Social Psychology, 36, 1-12.

Joreskog, K. G., & Sorbom, D. (1981). LISREL - Analysis of linear structural relationships by the method of maximum likelihocd (Version V). Chicago: International Educational Services.

Lefcourt, H. M. (1976). Locus of control: Current trends in theory and research. Hillsdale, N. J.: Erlbaum.

Lefcourt, H. M., Miller, R. S., Ware, E. E., & Sherk, D. (1981). Locus of control as a modifier of the relationship between stressors and moods. Journal of Personality and Social Psychology, 41, 357-369.

Levenson, H., & Miller, J. (1976). Multidimensional locus of control in sociopolitical activists of conservative and liberal ideologies. Journal of Personality and Social Psychology, 33, 199-208.

Levin, P. F., & Isen, A. M. (1975). Something you can still get for a dime: Further studies on the effect of feeling good on helping. Sociometry, 38, 141-147.

Lewinsohn, P. F., & Graf, M. (1973). Pleasant activities and depression. Journal of Consulting and Clinical Psychology, 41, 261-268.

Lewinsohn, P. F., & Libet, J. (1972). Pleasant events, activity schedules, and depression. Journal of Abnormal Psychology, 79, 291-295.

Morris, W. N., & Reilly, N. P. (1984). Toward the self-regulation of mood: Theory and research. Unpublished manuscript, Dartmouth College.

Morris, W. N., Reilly, N. P., & Englis, B. E. (1984). The relationship between mood and activity in a college population. Unpublished manuscript, Dartmouth College.

Mosteller, F., & Tukey, J. W. (1977). Data analysis and regression. Reading, MA: Addison-Wesley.

Mullen, B., & Suls, J. (1982). "Know thyself": Stressful life

changes and the ameliorative effect of private self-consciousness. Journal of Experimental Social Psychology, 18, 43-55.

Parkes, K. R. (1984). Locus of control, cognitive appraisal, and coping in stressful episodes. Journal of Personality and Social Psychology, 46, 655-668.

Pearlin, L. I. (1959). Social and personal stress and escape television viewing. Public Opinion Quarterly, 23, 255-259.

Rehm, L. P. (1978). Mood, pleasant events, and unpleasant events: Two pilot studies. Journal of Consulting and Clinical Psychology, 46, 854-859.

Reilly, N. P., & Morris, W. N. (1984). More on mood and activity in a college population. Unpublished manuscript, Dartmouth College.

Rosch, E., Mervis, C., Gray, W., Johnson, D., & Boyes-Braem, P. (1976). Basic objects in natural categories. Cognitive Psychology, 8, 382-439.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80, (Whole No, 609).

Stone, A. A. (1981). The association between perceptions of daily experiences and self- and spouse-related mood. Journal of Research in Personality, 15, 510-522.

Stone, A. A., & Neale, J. M. (1984). Effects of severe daily events on mood. Journal of Personality and Social Psychology, 40, 137-144.

Sweeney, P. D., Shaeffer, D. E., & Golin, S. (1982). Pleasant events, unpleasant events, and depression. Journal of Personality and Social Psychology, 43, 136-144.

Turner, R. G., & Peterson, M. (1977). Public and private self-consciousness and emotional expressivity. Journal of Consulting and Clinical Psychology, 45, 490-491.

Wilson, T. D., Laser, P. S., & Stone, J. I. (1982). Judging the predictors of one's own mood: Accuracy and the use of shared theories. Journal of Experimental Social Psychology, 18, 537-556.

Zevon, M. A., & Tellegen, A. (1982). The structure of mood change: An idiographic/nomothetic analysis. Journal of Personality and Social Psychology, 43, 111-122.